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Rural radio communications: Services and applications

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The internet has enormous power to transform rural communities. Internet based services can mitigate the gap between urban and rural areas in terms of access to various services, such as health-care, domain consultancy and education. It can also provide new avenues of income generation to rural areas. This paper gives an overview of some existing internet based services and applications for rural India and presents a case study of one application in Education.

Keywords: Rural radio communications, OSCAR, E-governance, E-healthcare, E-portals, E-agriculture, aAqua, eChoupal

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1 Introduction

There has been significant work in the extending the reach of the Internet to rural areas in India. One example of this is n-logue[1], which has commercially deployed corDECT[2] based wireless networks. A typical deployment has a hub-and-spoke model. A base station (called Access Center) is located somewhere close to the fiber point of presence. It provides wireless connectivity to subscriber stations (called Kiosks), which are deployed in neighbouring rural areas, in a radius of about 30 km. While the primary service is voice and video communication, it has been found that a variety of services are required for economic viability. Several such services have been identified and implemented.

Some of these service domains are:

(i) E-Governance—Web Durbar[1] is a voice-chat service for talking to the appropriate government administrators who may be located in distant cities.

(ii) E-Healthcare—Tele Medicine[1] is a video-service for getting access to doctors in cities.

(iii) E-Portals—Drishtee[3] Portal is an online service delivery network for various governments, private and corporate services related to enabling entrepreneurship in rural areas.

(iv) E-Agriculture—aAqua[4] and eChoupal[5] are services for getting access to agricultural experts located in research institutions.

These services are proving to be extremely useful in mitigating the digital divide. Furthermore, the existence of computing infrastructure at a Kiosk enables many additional local services such as photography, education, etc. Rest of this paper is focused on education as an area of service. A case study is presented wherein (i) appropriate content is developed to support teachers in rural areas and (ii) leverage the content creation process itself to provide an additional source of income to rural populations.

2 Education case study: Project OSCAR

The idea of computer-assisted instruction is now well established. However, most such applications typically target an urban audience. There is not enough content available which is suitable for use in rural areas. Project OSCAR (Open Source Computing Animations Repository)[6] is an attempt to create a searchable repository of Java based animation content for teaching concepts in various areas. The concepts range from high school to advanced topics and enable the user to learn in an interactive manner. A screen shot of the main page is shown in Fig. 1.

3 Project OSCAR: Outsourcing to rural areas

The global outsourcing model has proved that quality work can be done remotely. It is believed that this model can be extended to include rural populations, for applications which do not require continuous connectivity or interaction with counterparts elsewhere. One such application is educational content development. The model may work as follows: A developer from a rural area can sign up on a Content Portal (such as Project OSCAR), pick up one of the tasks for content creation and gets paid upon task completion. Typically, educational

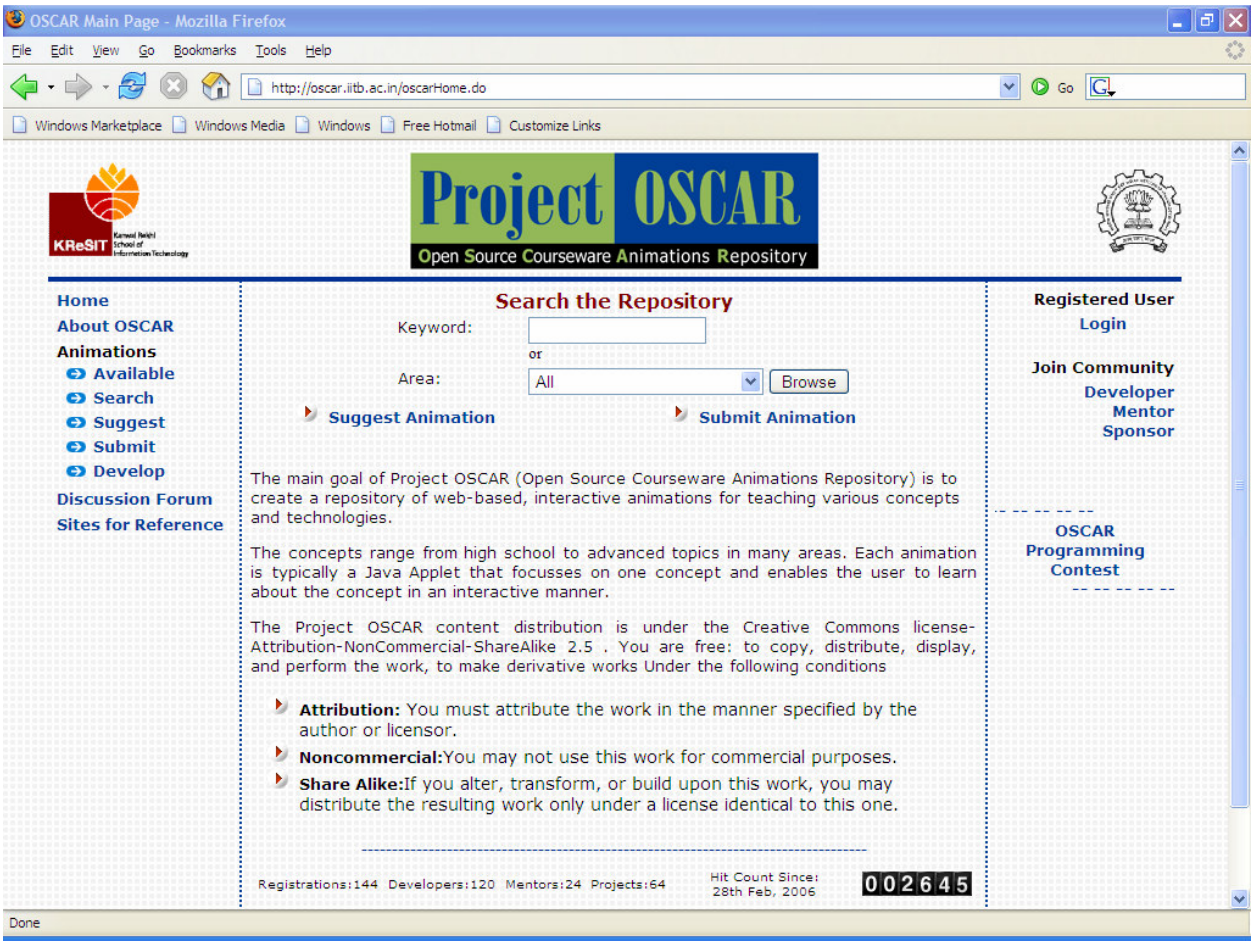

Fig. 1—Project OSCAR

content development does not require very high level of programming skills as compared to outsourcing of mainstream technical work. So such content development can be a viable source of income for rural populations.

In Project OSCAR, the author along with his team is carrying out a pilot project on outsourcing such educational content development to rural areas. In collaboration with a rural NGO (Non-Governmental Organization) called Timbaktu Collective (www.timbaktu.org). Some developers have been educated at Timbaktu and will be developing Java applets for teaching school-level science, without migrating to urban areas. They will be mentored remotely by staff at IIT, Bombay.

4 Conclusion

Given the dearth of good teachers in rural areas, there is a need for suitable computer aided educational content. Also, educational content development seems to be a suitable area for extending this outsourcing model to include the rural population, without requiring migration to urban areas.

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